Row reduce A,

reducimos por fila la matriz A

$$A \to \text{rref} \begin{pmatrix} 1 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & -3 & -1 \\ 0 & 0 & 1 & -2 & -2 \\ 0 & 0 & 0 & 0 & 0 \end{pmatrix}$$

So $r = 3$ for this matrix. Then

entonces r = 3 para esta matriz. Luego

$$\begin{aligned} \dim(\mathcal{N}(\text{A})) &= \boldsymbol{n}(A) && \text{(Definition NOM [343])} \\ &= (\boldsymbol{n}(A) + r(A)) - r(A) \\ &= 5 - r(A) && \text{(Theorem RPNC [344])} \\ &= 5 - 3 && \text{(Theorem CRN [343] =} \\ &= 2 \end{aligned}$$

We could also use ⟨acronymref|theorem|BNS⟩ and create a basis for $\mathcal{N}(A)$ with $n| - r = 5 - 3 = 2$ vectors (because the solutions are described with 2 free variables) and arrive at the dimension as the size of this basis.

Tambien podemos usar ⟨acronymref|theorem|BNS⟩ y crear una base para $\mathcal{N}(A)$ con $n| - r = 5 - 3 = 2$ vectores (porque las soluciones estan descritas con dos variables independientes) y llegamos a la dimension como el tamaño de la base.

Contributed by Robert Beezer

Contribuido por Robert Beezer

Traducido por Andrea Vivas